APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,624	08/28/2001	Robin U. Roberts	MESH019	4515

24273 7590 06/18/2007		EXAMINER
MOTOROLA, INC		GENACK, MATTHEW W
INTELLECTUAL PROPERTY SECTION		

ART UNIT	PAPER NUMBER
2617	

LAW DEPT
8000 WEST SUNRISE BLVD
FT LAUDERDAL, FL 33322

MAIL DATE	DELIVERY MODE
06/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-62* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   In view of the Appeal Brief filed on 16 February 2007, PROSECUTION IS

HEREBY REOPENED.

To avoid abandonment of the application, appellant must exercise one of the

following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply

under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed

by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and

appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth

in 37 CFR 41.20 have been increased since they were previously paid, then appellant

must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by

signing below:

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 39-41, 43-47, 52-55, and 57-59 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Orava, U.S. Patent Application Publication 2002/0071477 in

view of Bensaou et. al., U.S. Patent No. 6,934,297.

Regarding Claims 39 and 52, Orava discloses a wireless device, a plurality of which are used in an ad hoc network, the plurality of wireless devices acting as nodes connected to each other (Abstract, [0016], [0020], Figs. 1-3). Each wireless device may operate in one of several states, including a standby state and a connection state, whereby in order to establish a connection route, a wireless device discovers other wireless devices in its area that are available ([0043]-[0049], Fig. 6).

Orava does not expressly disclose wireless adhoc network that uses multi-hopping.

Bensaou et. al. teaches the use of dynamic multi-hop wireless communication systems in adhoc networking (Column 1 Lines 16-18).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Orava by providing for the use of multi-hopping in the wireless adhoc network.

One of ordinary skill in the art would have been motivated to make this modification because mobile units share a communication channel without the need for a network controller to allocate channels to the various mobile units, and because these types of systems are self-configurable, which allows for quick installation where temporary communication is needed (Bensaou et. al.: Column 1 Lines 19-25).

Regarding Claims 40-41, 45 and 54-55, when a wireless device is attempting to make a connection, it is in an inquiry substate, and it receives user information and network information in the form of Bluetooth device addresses and clock information of all wireless devices that respond to the inquiry; the master determines which wireless

devices are in the default standby state, and therefore, available as slaves ([0044]-[0045], [0047]).

Regarding Claims 43-44, 53, and 57, the wireless devices are informed of changes in the states of neighboring wireless devices in that the signals exchanged between said wireless devices are indicative of the current states of the wireless devices: standby state (the default), connection state, and the page, page scan, inquiry and inquiry scan, master response, slave response and inquiry response substates ([0043]-[049]).

Regarding Claims 46-47 and 58-59, wireless devices in the standby state are not communicating with other wireless devices of the ad hoc network ([0049]), and when a wireless device initiates a connection with a neighboring wireless device, the former becomes a master in the connection state, and the latter becomes a slave in the connection state, both devices formerly operating in the standby state ([0043], Fig. 6).

4.   Claims 42 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orava in view of Bensaou *et. al.*, further in view of Susnow *et. al.*, U.S. Patent Application Publication 2002/0159385.

Neither Orava nor Bensaou *et. al.* expressly discloses the reception, by a wireless device node, of credits for the relaying of packets.

Susnow *et. al.* discloses the use of flow control credits in the transmission of data packets in a wireless network, and the comparison of the current number of accumulated credits with a credit threshold, in the context of data sent from a source

node to a destination node by way of intermediate nodes in a wireless network

([0017], [0037], [0071]).

At the time that the invention was made, it would have been obvious to one of

ordinary skill in the art to modify the invention of Orava as modified by Bensaou et. al.

by providing for the reception, by a wireless device node, of credits for the relaying of

packets, and the comparison of the current number of credits of that node with a

maximum number of credits allocated for that node.

One of ordinary skill in the art would have been motivated to make this

modification so as to prevent any one node from being inundated with an excessive

number of packets to be relayed (Susnow et. al.: [0071]).

5.   Claims 48-50 and 60-62 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Orava in view of Bensaou et. al., further in view of Larsen et. al.,

U.S. Patent No. 6,810,428.

Orava teaches the use of line powered communication wireless

communication devices with the system of the invention ([0011]-[0012]).

Neither Orava nor Bensaou et. al. expressly discloses the grouping of

wireless device nodes by class, a class being selected from the group of classes

comprising nodes connected to line power, nodes with a high remaining battery life,

nodes with the least interference, nodes with the least available energy, and high

performance nodes.

Larsen et. al. discloses a wireless communications network comprised of

multiple mobile terminals, along with a method of operating such a network (Abstract,

Column 1 Lines 30-35, Fig. 1). The user terminals comprise transceivers that are

able to transmit wireless communications data to destination user terminals or

receive wireless communications data from destination user terminals by way of

intermediate user terminals in the same network (Column 4 Lines 34-37 and 51-63,

Column 5 Lines 4-9, Fig. 1). The user terminals comprise controllers that are able to

allow or prevent the transmission of said wireless communications data based on

routing data related to the powers required for transmission, powers available for

transmission, connection quality, and the potential levels of interference between

neighboring user terminals (Abstract, Column 1 Lines 40-45 and 64-66, Column 2

Lines 15-38, Column 4 Line 65 to Column 5 Line 3, Column 16 Lines 53-61, Column

25 Lines 26-35).

At the time that the invention was made, it would have been obvious to one of

ordinary skill in the art to modify the invention of Orava as modified by Bensaou *et. al.*

by grouping nodes by class, a class being selected from the group of classes

comprising nodes connected to line power, nodes with a high remaining battery life,

nodes with the least interference, nodes with the least available energy, and high

performance nodes, whereby an immediate neighbor node is set to either the

connection state or the standby state when a node belongs to one of these classes.

One of ordinary skill in the art would have been motivated to make this

modification because required power levels, available power, and interference are

common concerns in wireless networks, especially ad hoc wireless networks, which

involve low power devices and data being sent via several links.

6.   Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over
Orava in view of Bensaou *et. al.*, further in view of Batsell *et. al.*, U.S. Patent
Application Publication 2002/0145978.

Neither Orava nor Bensaou *et. al.* expressly discloses the storage of neighbor
tables in the wireless devices of the invention.

Batsell *et. al.* discloses a mobile ad hoc network wherein nodes update their
respective tables of one-hop neighbors by receiving messages from nodes that have
recently moved (Abstract, [0013], [0036], Fig. 1).

At the time that the invention was made, it would have been obvious to one of
ordinary skill in the art to modify the invention of Orava as modified by Bensaou *et. al.*
by providing for the exchange of routing tables, each routing table containing details of
the state of each neighboring terminal of the terminal containing the routing table,
among the wireless devices of the ad hoc network.

One of ordinary skill in the art would have been motivated to make this
modification in order to minimize route discovery overhead (Batsell *et. al.*: [0008]-
[0012], [0031]).

Response to Arguments

7.   Regarding Claims 39 and 52, Applicant asserts, on Pages 6-7 of the Remarks,
that Orava does not "teach or suggest the novel capability which Applicant's claimed
invention provides to ad-hoc networks comprising the ability for ad-hoc nodes not to
act as relay nodes (routers) to participate in the network." Claims 39 and 52 read
"wherein each of the plurality of nodes has an operational state comprising: an off

state, an active and relay state, or an active and non-relay state [emphasis added]".

Therefore, in order to anticipate these Claims, a reference need only disclose a

plurality of nodes capable of operation in either of the first two states, but that need

not be capable of operation in the third state. Examiner maintains that Orava

discloses an "off state" (the standby state) and an "active and relay state" (the

connection state), which meets the claimed limitation of "an off state, an active and

relay state".

Applicant's assertion, on Page 7 of the Remarks, that "the ability of the node

to be in a non-relay but active state is not discussed nor anticipated by Orava" is

moot because Claims 39 and 52 do not recite a plurality of nodes having "an off

state, an active and relay state, AND an active and non-relay state", but rather both

Claim 39 and Claim 52 contain the word "or" in Line 6.

Applicant asserts, on Page 7 of the Remarks, that "in Claims 46 and 58,

Applicant recites two classes of devices, infrastructure and non-infrastructure, that the

former is by nature a relaying device, the latter is not, and their relaying state is set

based on their class. In Claims 47 and 59. Applicant claims separate groups of devices,

and that the relaying state is set based on membership in the group." On the contrary,

Claims 46-47 and 58-59 only recite the treatment given to a neighbor node if and when

said neighbor node falls into a certain class. This is distinct from a recitation of a

system comprising a plurality of nodes, wherein at least one node belongs to each of

the classes mentioned. In other words, Claims 46-47 and 58-59 do not require that a

system have nodes belonging to each of the classes mentioned therein, rather, they only require that a certain state be set if and when a node falls into a particular class. Claims 46 and 58 are met by Orava in view of Bensaou et. al. because in Orava, every node is a network infrastructure component, and thus a neighboring node is always set to the connection state (e.g., the "active and relay state") when an originating node transfers data. Claims 47 and 59 are met by Orava in view of Bensaou et. al. because in Orava, all nodes collectively form a closed user group, and thus a neighboring node is always set to the connection state (e.g., the "active and relay state") when an originating node transfers data.

Regarding Claims 42 and 56, Applicant compares the disclosure of Susnow et. al. to the specification of the present invention on Pages 9-10 of the Remarks. Applicant fails to cite specific limitations of Claims 42 and 56 as allegedly not being anticipated by Susnow et. al.

8.   Applicant's arguments on Pages 11-12 of the Remarks, with respect to the rejection of Claim 51 in view of Orava in view of Bensaou et. al., further in view of Stanforth have been fully considered and are persuasive. Therefore, this rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made in view of Orava in view of Bensaou et. al., further in view of Batsell et. al. Applicant argument, , regarding the ownership of Stanforth, U.S. Patent Application Publication 2003/0045295, is persuasive.

Conclusion

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Matthew W. Genack whose telephone number is 571-

272-7541. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Duc Nguyen can be reached on 571-272-7503. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew Genack

Examiner

TC-2600, Division 2617

4 June 2007

DUC M. NGUYEN
SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2600